

Remarks

Claims 93-104 are pending in the application.

Claims 93-100 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,659,093 to Takubo et al. (Takubo). Claims 101-104 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takubo in view of "hydrofluorocarbons" in Kirk-Othmer Encyclopedia of Chemical Technology, pp. 714-729, © 2001 by John Wiley & Sons of record (Kirk-Othmer). Applicant requests the Examiner reconsider these rejections in view of the following remarks.

As the subject matter of the rejection is one of obviousness, the Examiner bears the burden of factually supporting this conclusion, and the Applicant need not submit any evidence of non-obviousness until the Examiner produces a prima facie case that the claims are obvious. At least one of the criteria necessary to establish this prima facie case is that all of the claimed limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580, 582-3 (CCPA 1974). For at least the reason the cited references do not teach or suggest all the pending claim limitations, a prima facie case of obviousness cannot be established and the pending claims are non-obvious and allowable.

For example, claim 93 recites a hydrogenation process that includes substituting at least one halogen atom of a fluorinated compound with at least one hydrogen to form a hydrofluorinated compound, with the substituting occurring in the presence of a hydrogenation catalyst and water.

The cited references do not describe hydrogenation of a fluorinated compound in the presence of water.

The Examiner correctly finds that Takubo describes the hydrogenation of the fluorinated compound pentafluoro-dichloropropane to pentafluoropropane, and that Takubo fails to explicitly describe that this reaction is performed in the presence of water. However, the Examiner is incorrect when interpreting Takubo to describe that air is present in the reaction and/or that Takubo does not teach anhydrous conditions. Takubo does not describe the presence of air in its reaction, but does describe what is known to persons of ordinary skill in the gas-phase reaction arts as anhydrous conditions.

Takubo describes:

That is, the summary of the first invention is resided in a method of producing 1,1,1,3,3-pentafluoropropane at high selectivity of not less than 80% by hydrogen reduction reaction using 1,1,1,3,3-pentafluoro-2,3-dichloropropane as a raw material, in a gaseous phase system in the presence of the noble metal catalyst such as palladium particularly at the temperature from 30 ° to 450 °C.

In the first invention, it is particularly important that the hydrogen reduction is carried out with the noble metal catalyst in a gaseous phase. For the gaseous phase reaction system of the gaseous phase reaction, a fixed bed-type gaseous phase reaction, a fluidized bed-type gaseous phase reaction and so on can be adopted.

In the reductive reaction with hydrogen of 1,1,1,3,3-pentafluoro-2,3-dichloropropane, the ratio of hydrogen to the raw material can be varied widely. But usually, at least a stoichiometric amount of hydrogen is used for the hydrogenation. Hydrogen of rather more than the stoichiometric amount, for example, 8 mole or more 8 mole to the total mole of the starting material can be used.

As such, Takubo describes a "reduction reaction" and that this reduction reaction is carried out "in a gaseous phase" in the presence of hydrogen.

Upon referring to the Examples of Takubo, more of Takubos teachings can be found.

Example 1 describes:

20 cc of a palladium catalyst carried on active carbon in 0.5 % concentration was filled in a SUS316-made reaction tube having inside diameter of 2 cm and length of 40 cm and heated to 250 °C by an electric furnace under nitrogen flow. After reaching a given temperature, the nitrogen gas was replaced with hydrogen gas and this hydrogen gas was flowed for a time.

Examples 2-6 being the only examples of the hydrogenation disclosed, echo the same general parameter of the gaseous phase reaction. In all these examples, catalyst is loaded into a tube, heated under nitrogen flow, and the nitrogen flow replaced with hydrogen gas.

Therefore, a fair and reasonable interpretation of Takubo does not include a teaching of hydrogenation in the presence of air, for at least the reason that Takubo refers to the reaction as reduction reaction and air is an oxidizing agent. Furthermore, because Takubo clearly describes heating catalyst under nitrogen flow and this technique is recognized as a drying technique, Takubo does describe the reaction under anhydrous conditions.

Futhermore, the remaining references cannot supplant Takubo's failure to describe water as part of a reduction reaction for at least the reason it would not be reasonable to make such a combination.


For at least these reasons claim 93 is not obvious in view of the cited references. Claims 94-104 depend from claim 93 and are allowable for at least the reasons given above regarding claim 93.

In addition, there remains prior art which was properly and timely submitted by Applicant on January 12, 2007; however, the initialed Form PTO-1449 which the Applicant received is incomplete. The Article cited by the Applicant was not initialed by the Examiner. A copy of the referenced Supplemental IDS with its accompanying Form PTO-1449 is included herewith, along with the initialed Form PTO-1449. It is requested that the Examiner consider this reference, initial the Form PTO-1449 and return it to the Applicant.

The Examiner is requested to telephone the undersigned if the Examiner believes such would facilitate prosecution of the present application. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Standard Time).

Respectfully submitted,

Dated: 11/19/07

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